CLAIMS

What is claimed is:

1. A method of motion compensation of digital video data, the method comprising:

receiving a motion compensation command having associated correction data related to a macroblock;

storing the correction data in a memory according to a first order corresponding to the motion compensation command;

performing frame prediction operations in response to the motion compensation command;

reading the correction data from the memory according to a second order; and

combining the correction data with results from the frame prediction operations to ~~generate an output video frame.~~

2. The method of claim 1 the first order is based on output from an Inverse Discrete Cosine Transform (IDCT) operation.

3. The method of claim 1 performing frame prediction operations further comprises:

generating a bounding box containing the macroblock; and

iterating the bounding box;

fetching reference pixels;

filtering the reference pixels;

averaging the filtered reference pixels, if necessary; and

adding correction data to the reference pixels.

4. The method of claim 1 wherein the motion compensation data includes at least one motion vector.

5. The method of claim 1 further comprising performing texturing operations for the macroblock.

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6. An apparatus for motion compensation of digital video data, the apparatus comprising:

means for receiving a motion compensation command having associated correction data related to a macroblock;

means for storing the correction data in a memory according to a first order corresponding to the motion compensation command;

means for performing frame prediction operations in response to the motion compensation command;

means for reading the correction data from the memory according to a second order; and

means for combining the correction data with results from the frame prediction operations to generate an output video frame.

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7. The apparatus of claim 6 the first order is based on output from an Inverse Discrete Cosine Transform (IDCT) operation.

8. The apparatus of claim 6 performing frame prediction operations further comprises:

means for generating a bounding box containing the macroblock; and

means for iterating the bounding box;

means for fetching reference pixels;

means for filtering the reference pixels;

means for averaging the filtered reference pixels, if necessary; and

means for adding correction data to the reference pixels.

9. The apparatus of claim 6 wherein the motion compensation data includes at least one motion vector.

10. The apparatus of claim 6 further comprising means for performing texturing operations for the macroblock.

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11. A circuit for generating motion compensated video, the circuit comprising:

a command stream controller coupled to receive an instruction to manipulate motion compensated video data;

a write address generator coupled to the command stream controller;

a memory coupled to the command stream controller and to the write address generator, the texture palette to store pixel data in a first order determined by the write address generator;

processing circuitry coupled to the write address generator to receive control information and data from the command stream controller to generate a reconstructed video frame;

a read address generator coupled to the processing circuitry and to the memory, the read address generator to cause the memory to output pixel data in a second order.

12. The circuit of claim 11 wherein the first order is block-by-block row major order.

13. The circuit of claim 11 wherein the first order corresponds to an output sequence of an inverse discrete cosine transform operation.

14. The circuit of claim 11 wherein the second order is sub-block-by-sub-block row major order.

15. The circuit of claim 11 wherein the processing circuitry comprises a setup engine that determines a bounding box for pixels manipulated by the instruction, wherein the bounding box contains all edges of a macroblock.

16. The circuit of claim 11 wherein the processing circuitry comprises a windower having a first mode wherein pixels inside a triangle within a bounding box are processed, and a second mode wherein all pixels within the bounding box are processed.